



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|----------------------|------------------|
| 10/608,411 | 06/30/2003 | Byung-sun Choi | Q73220 | 8067 |
| 23373 | 7590 | 03/28/2005 | EXAMINER | |
| SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037 | | | CATHEY II, PATRICK H | |
| | | ART UNIT | PAPER NUMBER | |
| | | 2613 | | |

DATE MAILED: 03/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/608,411 | CHOI, BYUNG-SUN | |
| | Examiner | Art Unit | |
| | Patrick H. Cathey II | 2613 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on _____.
- 2a) This action is **FINAL**. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-4,6-10,12-14,16-19,21-24,26-30 and 32-34 is/are rejected.
- 7) Claim(s) 5,11,15,20,25 and 31 is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 30 June 2003 is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

| | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

Figures 1-5 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the complexity estimation unit, which estimates complexity of a picture to be currently encoded, using the complexity of the decoded previous and current pictures and the complexity of the encoded previous pictures must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet,

and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim's 1-4, 6-10, 12-14, 16-19, 21-24, 26-30 and 32-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al. (US 6,167,084).

As for Claim's 1, 12, 17, 22, 32 and 34, Wang et al. teaches a video decoding unit within a transcoder which receives a compressed bitstream and performs decoding in order to output decoded pictures to the encoder (Column 7, line 57 to Column 8, line 24; See also Figures 4 and 5), a complexity estimation unit which estimates complexity of a current picture among the decoded pictures to encode the current picture and provides complexity information of the current picture (Column 8, line 54 to Column 9,

line 15; See also Figure 6), a target bit-allocation unit which performs desired bit-allocation using the complexity information of the current picture (Column 9, lines 28-37), a bit-rate control unit which controls bit-rate using bit-allocation information and state information from memory, which outputs an encoded bitstream (Column 8, line 54 to Column 9, line 15; See also Figure 6) and a video encoding unit which encodes the decoded pictures on the basis of the bit-allocation and state information of the bit-rate control unit (Column 9, lines 1-14). Wang et al. fails to specifically teach supplying the complexity estimation unit with a decoded signal before the encoding but does teach the video decoder within the transcoder (Figures 4 and 5). Therefore it would have been obvious to one of ordinary skill to have the complexity estimation unit use the decoded signal to estimate the complexity as opposed to the encoded signal because it would have only been the difference of when in the process the video signal was sent to the complexity estimation unit. (Official Notice)

As for Claim 2, Wang et al. teach comprising an output buffer which stores and outputs pictures encoded by the video encoding unit (Column 8, lines 34-36; See also Figure 6), where the state information of the output buffer is provided to the bit-rate control unit (Column 8, 41-42; See also Figure 6).

As for Claim's 3, 10, 13, 18, 23 and 30, Wang et al. teach where the compressed bitstream input to the video decoding unit is compressed in MPEG format (Column 7, lines 57-63).

As for Claim's 4, 9, 14, 19, 24, 29 and 33, many of the limitations have been addressed in the above rejections. In addition, Wang et al. teach where the complexity

estimation unit calculates complexity of a picture to be currently encoded, using complexity of decoded previous and current pictures output from the video decoding unit and complexity of an encoded previous picture output from the video encoding unit (Column 13, lines 43-48). Since complexity is based on Q (Equation 4 in Column 13, lines 42-50), quantization, note that Q can be an average, thus C, complexity, is based on previous encoded and decoded frames. This shows that the previous encoded and decoded frames may be used to measure the complexity.

As for Claim's 6, 7, 26 and 27, Wang et al. teach where the target bit-allocation unit increases a number of bits to be allocated for the current picture if complexity of an estimated current picture is large, and decreases number of bits to be allocated for the current picture if the complexity of the estimated current picture is small (Column 8, line 54 to Column 9, line 15).

As for Claim's 8, 16, 21 and 28, Wang et al. teach calculating the number of bits T1 to be allocated for a current I-picture using the complexity of the current picture where C denotes the complexity of the picture and K denotes the weighting factor for each of the picture types (See Equations 4 and 8-14 in Columns 11-13).

Allowable Subject Matter

Claim's 5, 11, 15, 20, 25 and 31 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The references not used in the above rejections were included because they teach additional information regarding complexity estimation and transcoding methods.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick H. Cathey II whose telephone number is (571)272-7326. The examiner can normally be reached on M-F 7:30 to 5:00 (Every other friday off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chris Kelley can be reached on (571)272-7331. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Patrick H. Cathey II
Examiner
Art Unit 2613

PHC


CHRIS KELLEY
COMPLEXITY/PATENT EXAMINER
ELECTRONIC BUSINESS CENTER 2600